ResearchGate

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/360791697

# Latin American Structuralism and Neo-structuralism

**Article** · May 2022

DOI: 10.1093/oso/9780198850113.003.0003

CITATIONS
5

READS
7

**1 author:**

Gabriel Porcile
Comisión Económica para América Latina y el Caribe
**139** PUBLICATIONS **1,431** CITATIONS

SEE PROFILE

All content following this page was uploaded by Gabriel Porcile on 23 May 2022.

The user has requested enhancement of the downloaded file.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 50
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi

# 3
# Latin American Structuralism and Neo-structuralism

*Gabriel Porcile*

## 3.1 Introduction

The origins of the Latin American structuralism (LAS) can be found in a paper written in 1948 by Raúl Prebisch and published the following year by the United Nations Economic Commission for Latin America[1]—ECLA, which would become ECLAC after incorporating the Caribbean region in 1984. In this paper, Prebisch outlined his centre–periphery theory, the central building block of the Latin American structuralist school (LAS).[2] In a nutshell, centre and periphery are two sets of countries that show distinct patterns of co-evolution of technological capabilities and trade specialization. The periphery is a laggard in terms of technological capabilities relative to the centre. Technology is a crucial determinant of international competitiveness, and hence asymmetries in technological capabilities (the technology gap) shapes the set of goods the periphery can competitively produce and export. This set of goods constitutes the periphery's pattern of specialization. Causality between technological capabilities and the pattern of specialization goes in both directions: specialization affects the learning trajectory of the periphery because what economic agents learn depends on what they currently produce and on their accumulated experience in specific sectors and technologies. In this way, specialization has an impact of its own on the technology gap.

The interaction between technological change and structural change has strong implications for the dynamics of growth and income distribution between centre and periphery and within the periphery itself. The pattern of specialization determines the relative rate of growth of the demand for exports and imports, which in turn defines the rate of economic growth compatible with current account equilibrium in the long run. By shaping the balance-of-payments (BOP)-constrained growth rate, specialization shapes the demand for labour in the periphery. It also determines the skills and level of education required in the production process, with key implications for the labour market, the bargaining power of workers, and the wage share in total income.

LAS aims to elucidate the various interactions taking place between specialization, growth, the behaviour of the labour market, and income distribution in an international system characterized by significant technological asymmetries. These interactions are revisited and discussed in this chapter, differentiating the original ('old') structuralist contributions of the 1950s and 1960s from those that emerged from the late 1970s and early 1980s onwards, which would form the 'neo-structuralist' school.

[1] Prebisch (1949). The theory was subsequently developed in Prebisch (1955, 1963, 1976).

[2] For a comprehensive review of the evolution of LAS, see Bielshowski (2009), Rodriguez (1980, 2007) and Bárcena & Torres (2019).

Gabriel Porcile, *Latin American Structuralism and Neo-structuralism* In: *New Perspectives on Structural Change.*
Edited by: Neil Foster-McGregor, Ludovico Alcorta, Adam Szirmai, and Bart Verspagen, Oxford University Press (2021).
© Oxford University Press. DOI: 10.1093/oso/9780198850113.003.0003

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 51
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



The rest of this chapter is organized as follows. Section 3.2 discusses why the technology gap between the centre and periphery emerges and persists, leading to asymmetric patterns of specialization in the international economy; Section 3.3 addresses the effects of these patterns on the equilibrium rate of economic growth; Section 3.4 is concerned with income distribution, in particular with heterogeneity in the labour market and the Prebisch-Singer hypothesis (deterioration of the terms of trade); Section 3.5 combines the various parts of the structuralist approach; Section 3.6 focuses on dynamics; and Section 3.7 draws policy implications. Differences between the old structuralist school and the neo-structuralist school in LAS are highlighted to illustrate the evolution of the theoretical debate and analytical tools of LAS. A final section, Section 3.8, concludes.

## 3.2 The International Diffusion of Technology and the Emergence of the Centre–Periphery System

The Industrial Revolution accelerated technological and structural change, initially, in a few countries whose production structures were transformed by innovation, the emergence of new industrial sectors and new production processes. The diffusion of technology, along with the correlated transformation of the economic structure, was highly asymmetric in the international arena. In the words of Prebisch, the international diffusion of technology was 'slow and uneven'. The result of this asymmetry was the emergence of an international system in which two ideal-types co-exist: a diversified centre, whose structure encompasses a large number of activities, in particular high-tech sectors; and a highly specialized periphery, whose structure comprises few, mostly low-tech activities, intensive in unskilled labour and/or natural resources. The penetration of new technology in the periphery is partial, localized, concentrated in export activities, and therefore transforms only a handful of industries. These industries absorb a small part of the total labour force, while the rest remains in unemployment or underemployment (Prebisch 1976; Pinto 1976; Sunkel 1978).

This description of the centre–periphery system has a strong Schumpeterian flavour. It identifies development with structural and technological change as in Schumpeter (1942, Chapter 7). However, when the centre–periphery theory was formulated, structuralist economists did not have a microeconomic theory explaining the macroeconomics of divergence—i.e. why the technology gap fails to spontaneously decline over time or why the international diffusion of technology is 'slow and uneven'. The reasons behind divergence in capabilities were then framed in terms of economies of scale and the mismatch between the lack of capital in the periphery and the high capital-intensity of modern industry. Only in the second half of the 1970s and in the 1980s did LAS begin to draw more systematically from the evolutionary theory of technical change to explain rigorously why differences in capabilities and specialization are so large and persistent.

This more sophisticated perspective on the dynamics of technical change would become one of the pillars of what would be subsequently called 'neo-structuralism'.[3] Fernando Fajnzylber, a leading representative of the neo-structuralist school, observed that multinational firms played a crucial role in the most dynamic sectors of Latin American

[3] One important aspect of the neo-structuralist school, which is beyond the scope of this chapter, is the analysis of environmental sustainability. See, in particular, Sunkel (1980), who was especially concerned with the environmental impacts of the prevailing patterns of production and consumption, both globally and in Latin America.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 52
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



economies. However, these firms concentrated the creative side of the Schumpeterian process of creative destruction in the centre countries, while the destructive side (the elimination of 'old' sectors, technologies, and competitors) occurred mostly in the periphery (Fajnzylber 1983, 1990; Katz 1987). In other words, creative destruction is highly asymmetric across countries and regions. Other structuralist authors further advanced these ideas by taking advantage of an increasing amount of empirical evidence—part of which was produced by ECLAC itself—on the barriers to learning and structural change in Latin American industry.[4] In addition, new evidence regarding the role of industrial and technology policies on structural change came from the successful experience of the so-called South-East Asian Tigers in the 1960s and 1970s (Fajnzylber 1983). The works of Amsden (1989) and Wade (1992) were highly influential, offering a detailed account of the importance of such policies for catching up in Asia, and providing new insights into why they were less successful in Latin America.[5]

Based on this evidence, structuralists observed that divergence between centre and periphery was not the inevitable outcome of international competition. Rather, divergence was one of various alternative paths crucially related to policy decisions. In more formal terms, the dynamics of centre and periphery may produce multiple equilibria: in the successful cases of catching up, which occurred mostly in South East Asia, industrial and technology policies were crucial to move the economy towards an equilibrium with a lower technology gap, a more diversified pattern of specialization, and a higher rate of economic growth. Although industrial and technology policies did encourage convergence in some periods in Latin America (especially in the case of Mexico and Brazil during Hirschmann's 'glorious thirties' between 1950 and 1980; see Bértola & Ocampo 2012, Chapter 4), these policies faltered after the debt crisis of the 1980s (Peres 2009). The lost decade of the 1980s along with the prevalence of neo-liberal views in economics in the 1990s, led to the discontinuity of industrial policies until the 2000s. Divergence prevailed, and the region fell behind for much of the period from 1980 to 2004. After 2004 the commodity boom substantially eased the external constraint on growth for exporters of natural resources (especially minerals) in South America, opening a new phase of rapid growth until the Great Recession of 2008 (ECLAC 2012).

The prevailing mainstream approach to technical change in the 1980s (which saw technical change as either exogenous or a pure externality stemming from capital accumulation) was of little help in the effort to interpret the empirical evidence coming from the contrasting experiences of Latin America and the South East Asian Tigers, and from case studies of Latin American industries. The evolutionary school, on the other hand, offered a more promising avenue. With its emphasis on tacit knowledge and the importance of experience and sector-specific learning by doing, the evolutionary school allowed structuralists to discuss path-dependence, hysteresis, and lock-in effects in technology and specialization. These phenomena play a crucial role in divergence and help understand why an economy can be trapped in a 'bad' (slow-growth, slow-learning) equilibrium. The works of Nelson & Winter (1982) and Arthur (1994), among others, discussed dynamic increasing returns and cumulativeness in technology, giving rise to market concentration and the sluggish expansion of the demand for the goods produced in the periphery.

[4] A discussion of the specific features of technological diffusion in Latin America can be found in Katz (1997), Alcorta & Peres (1998), Katz & Stumpo (2001), Cimoli & Katz (2003), and Bell (2006).

[5] The literature is extensive, including Chang (2001, 2002), Palma (2010), Nassif et al. (2011, 2016), Doner & Ross Schneider (2016). Specifically, in the case of the Republic of Korea, see Lee (2013) and Koo (2013).

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 53
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



The idea that technological capabilities and learning are to a large extent 'tacit' (i.e. they cannot be transmitted as blueprints or codified information, but depend on experience and are embodied in the routines of the firm) challenges the notion that all firms are homogeneous and that relative prices would suffice to provide the necessary stimulus for choosing the most efficient technology and specialization patterns. The evolutionary school provides the analytical tools required to discuss the persistence of asymmetries in technology and patterns of specialization, as well as the crucial role of industrial and technology policies in transforming the economy (Cimoli & Dosi 1995). This school would then become the microeconomic foundation of the neo-structuralist approach to the dynamics of convergence and divergence between centre and periphery.

## 3.3 Growth and the Balance-of-payments Constraint: Technology, Specialization, and the Real Exchange Rate

The centre–periphery approach has important implications for the analysis of growth and income distribution within the periphery. The approach involves combining the evolutionary supply side (discussed above) with a Keynesian view of the demand side in open economies. This section concerns itself with economic growth, while the next discusses income distribution.

The persistence of the technology gap implies that the periphery specializes in low-tech sectors, which typically tend to exhibit a lower income-elasticity of demand than advanced, sophisticated goods. As a result, the income elasticity of demand for exports from the periphery ($\varepsilon$) tends to be low, while the poorly integrated, porous production matrix in the periphery results in a very high income elasticity of imports ($\pi$).[6] The difference between the income elasticity of exports and imports results in an unsustainable external disequilibrium when the periphery raises its rate of economic growth above the rest of the world. Assume, for instance, that initially centre and periphery grow at exactly the same rate ($y^P = y^C$, where $y^P$ is the growth rate of the periphery and $y^C$ the growth rate of the centre). If the effect of changes in the real exchange rate (RER) are excluded (this assumption will be abandoned later), then the growth of exports and imports solely depends on the income elasticity of exports ($\varepsilon$) and the income elasticity of imports ($\pi$). If $\varepsilon < \pi$ and $y^P = y^C$, a persistent current account deficit will raise the ratio of external debt to GDP over time in the periphery.[7] Such a deficit cannot be sustained in the long run. If the income elasticities cannot be modified, then the periphery will have to reduce its rate of economic growth to equalize the rate of growth of the demand for exports and imports. In other words: the periphery will adjust its rate of economic growth downwards, such that $y^P < y^C$, to attain external equilibrium when $\varepsilon < \pi$.

This type of reasoning is an indication of the strong convergence of LAS with the post-Keynesian tradition in analysing open economy growth models. Both traditions argue that in the long run, the rate of economic growth of the periphery is BOP-constrained (Thirlwall 1979).[8]

[6] Araujo & Lima (2007), Gouvea & Lima (2010), and Felipe et al. (2012).

[7] The correct approach to the external constraint on growth requires looking at the country's current account balance and long-run capital flows, as they define whether growth (and indebtedness, if there is a deficit) is sustainable or not in the long run. To simplify the presentation of the model, the capital account will be assumed to be in equilibrium. It will also be assumed throughout the chapter that factor incomes and unilateral transactions are negligible, implying that the current account balance and the trade balance are equal.

[8] For an account of how BOP-constrained growth models emerged and developed in the literature, see Thirlwall (2011); for a rigorous presentation of the model, see Blecker (2011); for a discussion contrasting the

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 54
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



The idea of BOP-constrained growth is captured by the following equilibrium condition of the current account:

$$\frac{y^P = \varepsilon y^C + \ (1 + \vartheta + \mu)\hat{q}}{\pi} \tag{1}$$

With $y^P$ being the growth rate of the periphery (with external equilibrium), $y^C$ the growth rate of the centre, $\varepsilon > 0$ the income elasticity of exports, $\pi > 0$ the income elasticity of imports, $\vartheta < 0$ the price elasticity of exports, $\mu < 0$ the price elasticity of imports, $q = P^{\star}E/P$ the RER, $P^{\star}$ refers to foreign prices, $P$ to domestic prices and $E$ the nominal exchange rate (price of the foreign currency in terms of the domestic currency). For simplicity, it is assumed that there is neither an initial debt nor capital inflows that could allow the periphery to grow at a higher rate than that permitted by current account equilibrium. The well-known Marshall-Lerner condition implies that $(1 + \vartheta + \mu) > 0$. In the long run the RER should be stable (it cannot increase or fall without bounds) and hence $\hat{q} = 0$, which renders the simplest version of the BOP-constrained growth rate:

$$y^P = \frac{\varepsilon y^C}{\pi} \tag{2}$$

This result has been labelled Thirlwall's law after Anthony Thirlwall who derived it from a dynamic system of demand equations for exports and imports. Convergence between centre and periphery requires $y^P > \ y^C$, and hence $\varepsilon > \pi$.

Since the income elasticity ratio depends on the production structures of the centre and periphery (and hence on the technology gap) growth, convergence, technical change, and structural change must go hand in hand in the long run (Dosi et al. 2015). Convergence requires developing indigenous capabilities in order to change the elasticities. There are exceptional periods in which the periphery wins 'the commodity lottery'—when it produces a commodity in very high demand in international markets—and the external constraint is eased without developing new capabilities. However, save for such exceptional periods, attaining a higher rate of economic growth than the centre (and therefore convergence in income per capita) requires closing the technology gap (convergence in technological capabilities) and diversifying the economy (structural change).

A growing Keynesian literature explores the implications of this open economy model. From the LAS-Keynesian perspective, growth is not considered—as in the neoclassical tradition—a purely supply-side driven process. Technological backwardness in the periphery does not automatically lead to slower growth by reducing the rate of growth of total factor productivity.[9] The effect on growth of leads and lags in innovation and diffusion of technology is mediated by changes in the pattern of specialization. As this pattern varies, so

neoclassical and Keynesian views of the growth dynamics, see Setterfield (2011); for an early formulation of this idea in LAS, see Rodríguez (1977).

[9] Krugman (1989) calls the $y^P/y^C = \varepsilon/\pi$ result the 45-degree rule due to its strong support in empirical trade studies (i.e. plotting the relative rate of growth against the elasticity ratio for a sample of countries gives a straight line with slope equal to 1). Krugman inverts the causality of the Thirlwall-LAS approach, however. He considers that technical change is the immediate cause of growth, while the income elasticity of the demand for exports and imports endogenously adjusts to ensure that the equality $y^P/y^C = \varepsilon/\pi$ holds. For a discussion of different closure equations consistent with the BOP constraint, see Dutt (2002), Ros (2013), Pérez Caldentey (2015), Blecker (2016), and Porcile & Spinola (2018).

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 55
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



does the demand for exports and imports and the BOP-constrained equilibrium growth rate. Formally:

$$\frac{\varepsilon}{\pi} = g(G) \tag{3}$$

Equation (3) states that the ratio between the income elasticity of exports and imports is a function of the technology gap, $G = log(T^C/T^P)$, where $T^i$, $i = C, P$ are technological capabilities in the centre and periphery respectively. Behind this result lies the idea that—as mentioned—technology is the crucial determinant of the pattern of specialization and the BOP-constrained growth rate in the long run.

Note that in Thirlwall's law (as stated in Equation 1) it is *changes* and not *levels* of the RER that affect economic growth (see the discussion in Blecker & Setterfield (2019, Chapter 9)). Since in the long run $\hat{q} = 0$, the RER is not in the argument of the BOP-constrained growth function in the simplest version of Thirlwall's law (Equation 2). However, this result has been contradicted by empirical evidence (Rodrik 2008; Ffrench-Davis 2012; Razmi et al. 2012; Cherkasky & Abeles 2019). Moreover, LAS and Keynesian economists have challenged, also from a theoretical standpoint, the view that the level of the RER is ineffective in shaping the BOP-constrained rate of growth (Blecker 2016). The recognition that $q$ matters for growth is the second pillar that distinguishes neo-structuralism from the old structuralism (the first pillar being, as mentioned above, a more sophisticated understanding of technical change at the micro level).

What are the avenues through which the RER can influence the BOP-constrained equilibrium rate of growth in the post-Keynesian and neo-structuralist traditions? A first possible mechanism is that a higher RER compensates (at least partially) for the competitive disadvantage associated with technological backwardness in the periphery (this is the mechanism suggested, for instance, in Cimoli & Porcile (2014) and Oreiro (2016)). A competitive and stable $q$ may help the periphery to diversify and remain competitive in a broader set of goods, particularly in goods in which the technological disadvantage is not so large. To the extent that the RER affects the pattern of specialization, it also affects (as discussed above) the BOP-constrained growth rate. This mechanism is probably relevant for sustaining competitiveness in medium-tech sectors, while it is highly unlikely that a high RER could effectively provide a competitive edge for the periphery in high-tech sectors. In addition, the effectiveness of the RER in stimulating learning and structural change will critically depend on having in place a supportive industrial policy.

A second mechanism involves hysteresis phenomena related to the loss of technological capabilities, or at least to a slower accumulation of such capabilities with respect to the movement of the international technological frontier. The loss of firms, activities, and capabilities during a period of RER appreciation compromises learning and reduces technological spillovers across sectors in the domestic economy.[10] In addition, phases of RER appreciation are associated with subsequent phases of debt crises, economic recession, and a sharp fall in the investment rate (Moreno-Brid 2003; Botta 2009; Ocampo et al. 2009; ECLAC 2016). The collapse of investment compromises the steady absorption of new technology. As a result, when the RER returns to a more competitive level and investment recovers, crucial capabilities are no longer in place to help the periphery reinitiate the

[10] The loss of export markets is especially costly in terms of learning because these markets are more demanding and subject to more intense competition.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 56
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



process of diversification and catching up. There is a hysteresis factor at work associated with a new (higher) technology gap in equilibrium. The persistence in time of a temporary loss in capabilities and learning is the expression of the so-called Red Queen Effect, i.e. the need to continuously run to remain in the same place in the technological race when the international technological frontier is shifting.

When the interactions between the RER, specialization and technology in the BOP-constrained growth model are considered, the relative South–North growth function becomes:

$$\frac{y^P}{y^C} \equiv y = \theta(G, q) \text{ with } \theta_G < 0 \text{ and } \theta_q > 0 \quad (4)$$

At odds with Equation (3), the equilibrium relative rate of growth is now a function of the technology gap *and* the RER (through its direct effect on diversification and indirect effect on learning and investment). Equation (4) condenses the neo-structuralist view, in which both a fall in the technology gap and a rise in the RER boost competitiveness and curb the BOP constraint on growth.

The importance of the RER in sustaining growth when the economy is BOP-constrained, and the impact of periods of RER appreciation on investment and the production structure of the country (an impact that goes beyond short-term fluctuations due to the hysteresis phenomena and the loss of capabilities), explain why neo-structuralists strongly support: (i) macro-prudential policies and capital controls, especially in periods of high financial liquidity in the international system, to avoid the appreciation of the domestic currency, the emergence of credit bubbles, and the risk of an explosive path of the external debt; (ii) counter-cyclical policies aimed at sustaining public and private investment throughout the economic cycle in order to ensure the continuation of the catching-up effort and to prevent the technology gap from widening; and (iii) exchange rate policies aimed at keeping the RER stable and competitive.[11] The RER policy must be combined with a strong industrial policy to ensure that the peripheral economy increasingly relies on non-price competitiveness for export growth rather than on price-competitiveness, since the latter may have negative implications for income distribution (see the next section).

## 3.4 Income Distribution, Structural Heterogeneity, and the Prebisch-Singer Hypothesis

The production structure shapes the income distribution before taxes and transfers in two ways. Firstly, a poorly diversified production structure implies a lower BOP-constrained growth rate and hence, *ceteris paribus*, a less dynamic demand for labour. Second, a low-tech production structure demands mostly unskilled workers, offering fewer opportunities to learn and accumulate specific skills and knowledge. Both forces reduce the bargaining power of labour and hence the ability of workers to translate productivity growth into higher real wages. The weakness of the labour market is aggravated by the existence of a large reserve army in developing economies (usually in the form of a large informal sector), which puts downward pressure on wages and creates a cleavage between the earnings of formal and informal/subsistence workers.

[11] On the relationship between the real exchange rate and growth, see, amongst others, Ffrench-Davis & Ocampo (2001), Bresser-Pereira (2008), Frenkel & Rapetti (2011), Missio et al. (2015), Neto & Porcile (2017), and Guzman et al. (2018).

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 57
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



A distinctive feature of the periphery is the large share of total employment in low-productivity and subsistence sectors, which reflects the limited penetration of technology in production that results in few high-productivity jobs. It also implies the persistence of substantial productivity gaps between modern (usually export-oriented) sectors and the rest of the economy, which LAS labels 'structural heterogeneity'. Such productivity gaps are also present in the centre, albeit in a less marked and pervasive way.[12] For this reason, LAS characterizes the periphery as 'heterogeneous' in opposition to the more homogenous levels of labour productivity prevailing in the centre.

The downward pressure on wages contributes to what is usually regarded as one of the main LAS insights, namely the *theory of the deterioration of the terms of trade* (the Prebisch-Singer hypothesis). This theory argues that in the long run the terms of trade of the periphery falls as workers and firms fail to retain the fruits of technical progress in the form of higher wages or higher profits. On the one hand (as discussed above), the weakness and fragmentation (structural heterogeneity) of the labour market prevents the periphery from transforming productivity gains into higher real wages. On the other hand, the periphery cannot capture productivity gains in the form of higher profits due to the nature of its export and import markets. Since the periphery specializes in low-tech, homogeneous goods, it competes in sectors in which entry barriers are relatively low. Technology is widely diffused in these sectors, and prices tend to fall *pari passu* with technical change. Conversely, the periphery imports technology-intensive goods, the markets for which comprise high entry barriers associated with advanced technological capabilities that are difficult to master. Firms in the centre are therefore price makers: they can secure oligopoly rents through innovation. In the typology suggested by Reinert (2006), the prevailing mode of social distribution of the gains in productivity in the periphery is 'Ricardian', based on the fall in prices (benefitting everyone in the international economy), while in the centre the 'collusive' mode predominates, by which such gains are captured either by oligopolistic firms or by workers organized in powerful labour unions(productivity gains are therefore kept in the centre).[13]

The empirical debate over the evolution of the terms of trade attracted much attention when it was first formulated in the 1950s and continues to be controversial (for a review see Razzaque et al. 2007). Contrasting results have been found in the literature, associated with the use of different price indices, commodities bundles, definitions of the terms of trade and time periods. All in all, the evidence mildly favours the Prebisch-Singer hypothesis. While the commodity boom of the 2000s reinvigorated the Ricardian prediction that natural resources would become increasingly more expensive than industrial goods, Ocampo & Parra (2010) show that this is not the case when commodity prices are studied from a very long-run perspective (i.e., from the late nineteenth century to the first decade of the twenty-first century). Similar results are reported by Erten (2010) for a shorter period (1960–2006). She stresses that the declining trend in the terms of trade does not take the form of a smooth, continuous process, but is instead punctuated by discontinuities and structural breaks. She also shows that such a trend is specific to developing economies rather than to the (broadly defined) types of goods they export (manufactures versus primary goods).

[12] Even if large disparities in productivity across industries exist in the centre, the share of informal and subsistence workers in total employment is very low compared to the periphery.

[13] Reinert (2006) argues that '[t]he benefits of technology clearly spread in the economy in a different pattern from what the classical and neoclassical economists expect. I call this the collusive mode of diffusing the benefits from technological change: the benefits are divided among the capitalists, the workers, and the government in the producing nation. (The word collusive does not imply a conspiracy. This collusion comes about by the normal working of the economic, social, and political forces)' (pp. 14–15).

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 58
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



Developing economies that are major exporters of manufactures showed an even more acute decline in their terms of trade than non-oil exporters of primary goods.

The debate over the terms of trade is important for many reasons. It alerts policymakers to the 'fallacy of composition' (Blecker & Razmi 2010) and the risks of following a 'desperate export strategy' that may bring about 'immiserizing growth'. In addition, it reinforces the need to address the dynamic forces of technological and structural change that underlie the declining terms of trade. The fact that the relative price of both primary goods and manufactures exported by developing economies declined underlines the importance of building more sophisticated capabilities in these countries to allow them to capture the benefits of technical change and international trade.

## 3.5 A Schematic Representation of Latin American Structuralism

The existence of a technology gap and the self-reinforcement mechanisms that link structural change, labour demand, and economic growth are the main drivers of international divergence and convergence. They explain the high vulnerability of periphery economies to trade, finance, and technological shocks. These interactions are represented—in a highly stylized form—in Figure 3.1.

The diagram begins by assuming the existence of a technology gap between the centre and periphery. The story is told from the standpoint of the periphery and takes the growth rate of the centre $y^C$ as exogenous. The technology gap is defined in Box A as $G = log(T^C/T^P)$. Asymmetries in productivity between the centre and periphery increase with the technology gap. These asymmetries, in combination with the relative wage, define the sectors in which the periphery is competitive in international markets. In other words, they define the pattern of specialization, with the periphery less diversified than the centre and specialized in low-technology sectors (Box B). Such specialization results in a lower relative (periphery/centre) rate of growth consistent with external equilibrium (Box C).

It is assumed that all else being equal, the higher the technology gap, the lower the technological intensity of the production structure of the periphery and the lower the BOP-constrained equilibrium rate of growth. The asymmetry in technological capabilities could be to some extent compensated by a lower relative wage and/or a higher nominal exchange rate in the periphery, which raises the RER and encourages price competitiveness and diversification.[14] This compensating effect captures the role of the level of the RER in growth as argued by the neo-structuralists. While a fall in the technology gap boosts growth and improves the relative wage of the periphery, a rise in the RER improves growth at the cost of worsening relative wages.

The relative periphery/centre rate of growth, in combination with productivity growth, gives the relative rate of growth of labour demand in the periphery vis-à-vis that in the centre (Box D). The supply of labour, in turn, is represented by the elasticity of labour supply in response to rising wages in the periphery (Box E). By combining the supply and demand of labour in the labour market, it is possible to find the relative centre/periphery wage (Box F). Wages in the centre and periphery must be expressed in the same unit, which

[14] Holding all else constant, if firms in both regions set prices by applying a constant mark-up on unitary costs, then an increase in relative wages results in a rise in relative South–North prices. Assume that prices are set following the mark-up rule, $P^i = z^i(W^i/a^i),\ i = C, P$, where $z > 1$ is the mark-up factor, $a$ is labour productivity and $i = C, P$. Assume $P^i$ is a composed price index of the goods produced in country $i$. Therefore, it will be true that the RER equals $q = P^C E/P^P = z^C(W^C/a^C)/z^P(W^P/a^P)$. All else equal, the RER will fall with a rise in the periphery–centre relative wage.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 59
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



is why the nominal wage in the centre is multiplied by the nominal exchange rate in the periphery.[15] The nominal exchange rate $E$ varies with the countries' exchange rate policy. If the supply of labour in the periphery is highly elastic, most of the adjustment in the labour market will take place through changes in employment rather than through changes in the relative wage.

Figure 3.1 also shows that growth and diversification have a feedback effect on the technology gap. A more diversified production pattern implies a higher rate of growth which—through learning by doing as in the Kaldor-Verdoorn law—reduces the technology gap (Box G). Another learning-enhancing effect of diversification is related to technological externalities generated by the diversified set of skills and knowledge that exist in a more complex economy. Diversification by itself can help reduce the technology gap, as represented by arrows pointing in the two directions between Boxes A and B.

Figure 3.1 facilitates viewing LAS through both Schumpeterian and Keynesian lenses. Boxes A and B are clearly Schumpeterian (supply side and technology driven), while Boxes C and D are predominantly Keynesian (demand driven); Box G (Kaldor-Verdoorn) combines Keynesian and Schumpeterian forces, as demand growth and learning reinforce each other. The boxes related to the demand and supply of labour, and to the behaviour of the RER, provide a crucial role to labour market institutions and to exchange rate policy in defining growth as well as income distribution in the periphery, a topic expanded upon in the next section.

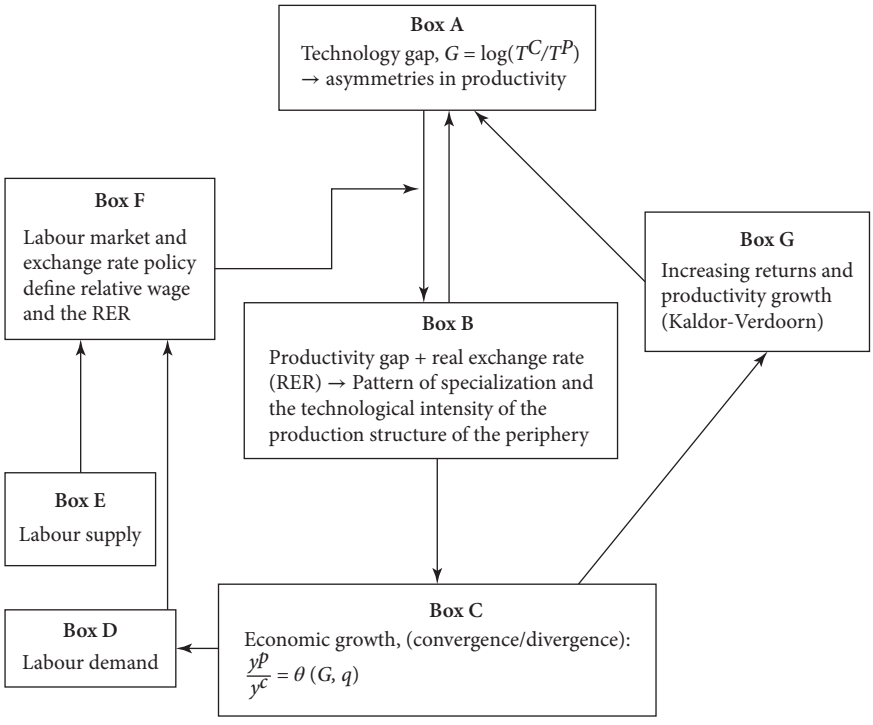
Box A
Technology gap, $G = \log(T^C/T^P)$
→ asymmetries in productivity
Box F
Labour market and exchange rate policy define relative wage and the RER
Box G
Increasing returns and productivity growth (Kaldor-Verdoorn)
Box B
Productivity gap + real exchange rate (RER) → Pattern of specialization and the technological intensity of the production structure of the periphery
Box E
Labour supply
Box D
Labour demand
Box C
Economic growth, (convergence/divergence):
$\frac{y^p}{y^c} = \theta\,(G, q)$

**Figure 3.1.** Co-evolution of the technology gap, specialization, and BOP-constrained economic growth

*Source*: Author's elaboration

[15] The nominal exchange rate is defined as units of the periphery currency per unit of the centre currency.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 60
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



## 3.6 Dynamics: Technology, Specialization, and the Labour Market

This section addresses the dynamics of the LAS diagram of the previous section. There are four endogenous variables: relative South–North growth (convergence), the relative South–North wage, the technology gap (relative North–South technological capabilities) and the degree of diversification and sophistication of the pattern of specialization of the South. The assumption of a constant mark-up implies that changes in relative wages and in the nominal exchange rate directly translate into changes in the RER (see footnote 9).

The state variables move with different velocities. Changes in technological capabilities tend to occur at a much slower pace than changes in wages and growth. The short run is defined as the period in which both the labour market and the current account attain equilibrium (defined by a constant RER and a zero current account balance), while the technology gap is constant. In the long run, technological capabilities vary, and the technology gap moves towards its equilibrium position.

### 3.6.1 The Long Run: The National System of Learning and the Dynamics of the Technology Gap

To keep the LAS story as simple as possible, it is assumed that technological learning comes as an externality to all firms, stemming from international technological spillovers from the centre to the periphery. The idea is that the higher the technology gap, the higher the opportunities for learning and the higher the potential technological spillovers from which the periphery may benefit.[16] These potential spillovers, however, will only involve actual learning if the periphery builds up the required absorptive capabilities—which includes indigenous R&D, education and training, policies for encouraging more technology-intensive industries, and support to public and private institutions engaged in innovation and the diffusion of technology. The set of enabling conditions shaping the absorptive capacity of the periphery is the National System of Learning (NSL).

Formally, the rate of growth of the technology gap is an inverse function of the gap itself ($G$, potential technological spillovers) and an exogenous parameter $\mu$ that represents the NSL, i.e., the efforts of the periphery to adopt, adapt, and improve on foreign technology. For simplicity, the role of the RER and of diversification in driving the evolution of the technology gap will be ignored (more on this below). Formally:

$$\dot{G} = G(G, \mu), G_G < 0, G_\mu < 0 \tag{5}$$

There is an equilibrium value of the technology gap (that makes $\dot{G} = 0$) for which the effective spillovers that benefit the periphery exactly matches the creation of new capabilities in the centre. In other words, the velocity with which the centre creates new technology is equal to the velocity with which the periphery absorbs these innovations. Such an equilibrium value of the technology gap is a negative function of the NSL represented by

[16] Verspagen (1993) argues convincingly in favour of a more realistic nonlinear relationship between the rate of growth of the technology gap and the level of the gap. To keep the model simple a monotonous decreasing relation between the two variables will be assumed, while acknowledging that the actual dynamics are much more complex than those discussed in this section.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:29 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 61
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



$\mu$. An increase in $\mu$ shifts the $\dot{G}$ curve to the left and reduces the technology gap in equilibrium. This in turn has a positive effect on the pattern of specialization (namely, structural change towards more technology-intensive goods), the income elasticity ratio, and the BOP-constrained rate of growth.

### 3.6.2 The Short Run: The Dynamics of the Labour Market and the Real Exchange Rate

The short run dynamics lead to equilibrium in the labour market and in the current account.[17] Equilibrium is defined as a situation in which economic agents have no motive to change behaviour. Equilibrium in the labour markets implies that workers neither demand higher wages nor accept lower wages than those prevailing in the market, while firms do not have incentives to change the prices they charge or the quantity of labour they demand. In turn, current account equilibrium implies that the existing levels of investment and consumption are compatible with a zero current account balance. Therefore, there is no turbulence in the external sector leading firms and consumers to revise expectations and decisions.

Firstly, consider behaviour in the labour market (see Figure 3.2). The isocline $\dot{q} = 0$ shows all the combinations of relative growth and the RER that keeps the RER constant. It represents a situation in which workers accept their relative wage, given the relative rate of growth. The link between growth and the RER in the labour market is given by changes in prices and in the bargaining power of workers.

To see how a stable relationship between growth and the RER is attained, assume that initially there is an increase in the periphery/centre relative growth rate ($y = y^P/y^C$) that increases the demand for labour in the periphery as compared to that in the centre (the rate of relative growth increases from $y_1$ to $y_2$). The economy moves from point $A$ to point $B$ in Figure 3.2. Higher growth implies a higher demand for labour and a higher bargaining power of workers, particularly if there are organized labour unions. As a result, part of the rise in the demand for labour takes the form of a rise in wages. Assuming a constant mark-

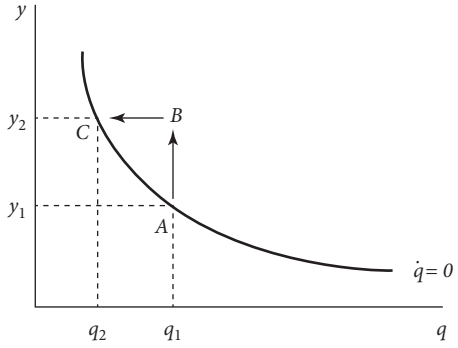


**Figure 3.2.** Labour market equilibrium: the $\dot{q}=0$ isocline
*Source*: Author's elaboration

[17] The short-run equilibrium corresponds to the medium-run equilibrium suggested in Carlin & Soskice (2006). Recall that during the adjustment of the economy to its short-run equilibrium, the technology gap is constant.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary_62
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



up factor as before, the rise in wages leads to a rise in prices. The rise in prices in the periphery (with constant prices in the centre) entails a fall in the RER. At the end of the adjustment process, the relative wage has moved in favour of the periphery and the RER has appreciated (from $q_1$ to $q_2$). The labour market will be in a new equilibrium at point *C*.

In other words, the higher the rate of growth, the higher the bargaining power of workers, and the higher (the lower) the relative wage (RER) that is necessary to satisfy union's demands in equilibrium.[18] This is why the slope of the $\hat{q} = 0$ isocline is negative. In the special case of a Lewisian labour market, workers have no bargaining power. The entire effect of the rise in the demand for labour will be a reduction of underemployment (and the consequent rise in formal employment), without affecting relative wages and prices (the $\hat{q} = 0$ curve is vertical at the level defined by the subsistence wage in the periphery).[19] Equilibrium in this case means that the rate of growth of labour demand equals exactly the rate of growth of the labour supply drawn from the labour reserve army, with no changes in the RER.

The institutions of the labour market—such as the degree of unionization, social legislation, minimum wages, and unemployment benefits—may either hinder or boost the bargaining power of workers. In this way they affect the position and slope of the $\dot{q} = 0$ isocline. In addition, since the relative wage in the centre and periphery are evaluated in the same currency, changes in exchange rate policy also shift the $\dot{q} = 0$ curve, especially when workers do not have the capacity to fully neutralize the impact of devaluations on real wages.

### 3.6.3 Current Account Equilibrium, Animal Spirits, and the Dynamics of Aggregate Demand

The forces that bring about current account equilibrium are represented in Figure 3.3 by a conventional $CC = 0$ curve. The $CC = 0$ curve represents the combinations of relative growth and the RER that simultaneously keep the current account in equilibrium and the relative rate of growth steady. Formally, the $CC = 0$ curve represents the isocline $\dot{y} = 0$, the combinations of $y$ and $q$ that keep $y$ constant. Plotting relative growth against the RER when the current account is in equilibrium produces a positively sloped curve. If the periphery increases its rate of economic growth, imports of goods and services will grow accordingly. A higher real exchange rate will then be necessary to bring forth the exports required to pay for those imports. Inversely, if the relative rate of growth falls triggering a fall in imports, then external equilibrium will be compatible with a lower RER and a lower export growth rate.

How do actors behave when the economy is off the $CC = 0$ curve—for instance if there is a deficit of the current account associated with a high rate of growth, e.g. at point *A* in Figure 3.3? The main adjustment mechanism works through changes in expectations associated with a deficit or a surplus of the current account. Private and public expectations will react to current account imbalances. If there are persistent deficits, expectations become pessimistic, as a sharp depreciation or fiscal contraction loom on the horizon. Animal spirits falter, investment and consumption fall, and economic growth recedes. As the rate of growth declines, so too do imports, bringing the current account back to its equilibrium path ($CC = 0$).

[18] Note that it is assumed that firms are also in equilibrium in the sense that they apply their desired mark-up factor over unit wage costs and use labour and capital efficiently.

[19] For a more general discussion of the implications of a labour surplus for growth in developing economies, see Ros (2013).

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 63
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



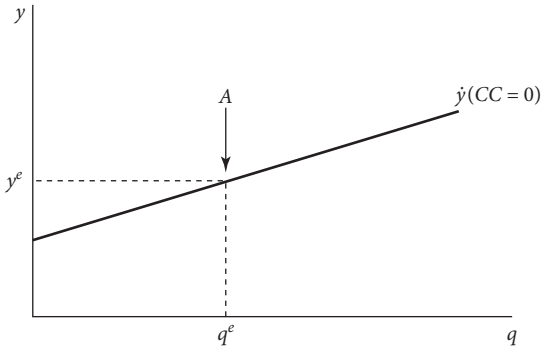


**Figure 3.3.** Current account equilibrium: the $\dot{y}=0$ isocline
*Source*: Author's elaboration

Conversely, a surplus of the current account induces favourable expectations about the possibility of a higher rate of growth that is sustainable for a longer period. In this case, investment and consumption move upwards, led by reinvigorated animal spirits. This is the point stressed by Robinson (1966, p. 8): 'the most important benefit of a surplus on income account, which affects the whole economy, is that, provided that there are energetic enterprises and thrifty capitalists to take advantage of it, it permits home investments to go full steam while a deficit country is nervously pulling on the brake for fear of excessive imports.' As relative growth increases, imports will also rise, moving the current account back to its equilibrium path.

### 3.6.4 Combining Equilibrium in the Labour Market with a Balanced Current Account

It is now possible to put both curves together: the one representing adjustments in the labour market and the one representing adjustments to current account imbalances. This combination appears in Figure 3.4, in which the adjustment process leads to the stable equilibrium $(q^e,\ y^e)$.

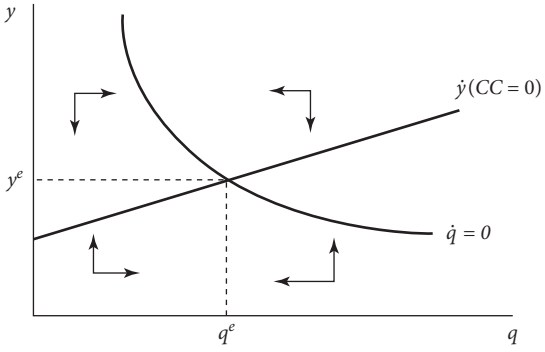


**Figure 3.4.** The short-run equilibrium
*Source*: Author's elaboration

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 64
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



While relative wages, inflation, and the RER are driven by conflicting claims in the labour market (the $\dot{q} = 0$ isocline), relative growth is driven by Robinsonian changes in expectations and aggregate demand triggered by deficits or surpluses in the external sector (the $\dot{y} = 0$ isocline). Equilibrium implies at the same time stable wages and employment rates in the labour market and a sustainable path in the external sector.

## 3.7 Comparative Dynamics: The Impact of Exchange Rate, Labour Market, and Industrial Policies

The LAS phase diagram allows for the consideration of the consequences of adopting different type of policies in the periphery. Figure 3.5 illustrates the effect on growth and distribution of changes in exchange rate policy, while Figure 3.6 does the same for industrial and technological policy—the two pillars of neo-structuralism.

### 3.7.1 Comparative Dynamics in the Short Run: Exchange Rate Policy and the Institutions of the Labour Market

Assume that there is a change in exchange rate policy through which the government prevents capital inflows from appreciating the domestic currency and/or accelerates the rate of nominal devaluation. Since the relative wage is defined as $w = W/W^*E$, a rise in $E$ (with constant nominal wages in the periphery and centre) shifts the $\dot{q} = 0$ isocline to the right, from $\dot{q}_1 = 0$ to $\dot{q}_2 = 0$. For the same rate of growth, the equilibrium level of the RER (relative wage) is now higher (lower) than before the policy change, increasing from $q_1$ to $q_2$ in Figure 3.5. There is a worsening of the income distribution in the periphery's formal labour market[20] and a deterioration of the terms of trade. At the same time, the

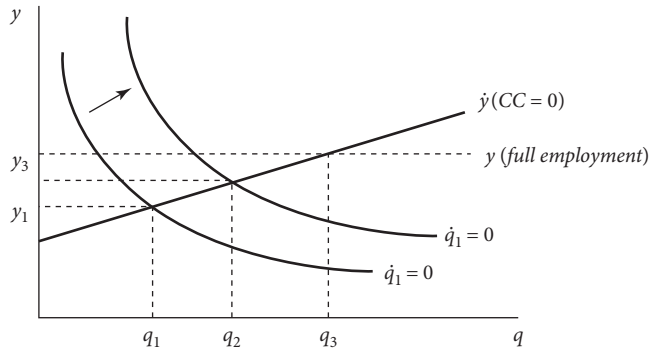


**Figure 3.5.** Growth, income distribution, and exchange rate policy
*Source*: Author's elaboration

[20] The aggregate net effect on income distribution in the periphery when the real exchange rate appreciates is ambiguous. A rise in the relative wage with lower growth may imply more people underemployed or unemployed, and a higher wage gap between workers in the formal and informal sectors. On the other hand, the deteriorating effect of a higher real exchange rate on real wages and on income distribution in the formal labour market is negative with no ambiguity. The analysis in this chapter focuses on the latter.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 65
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



competitiveness of the periphery increases, giving rise to a higher relative rate of growth with external equilibrium. Inversely, a policy that allows periods of financial bonanza to appreciate the real exchange rate and/or delays devaluations to avoid a rise in inflation shifts the $\dot{q} = 0$ isocline to the left. Relative growth in this case falls hand in hand with the fall in competitiveness.

A similar effect follows from a change in the institutions governing the labour market. Any policy that weakens the union's bargaining power (such as limits to their ability to organize and mobilize resources, lower benefits for the unemployed, or lower minimum wage) raises the RER for all rates of relative growth. The $\dot{q} = 0$ isocline then shifts to the right. In some cases, exchange rate policy and labour market policy may reinforce each other to increase competitiveness—for instance, if the government sets a rule by which wages are renegotiated between certain intervals, while the nominal exchange rate adjusts continuously, or if the government negotiates a truce in wage demands as part of a stabilization programme after a devaluation of the currency.

Changes in the institutions shaping the bargaining power of labour and/or exchange rate policy entail a trade-off between growth and relative wages. This trade-off does not emerge, as in conventional models, out of a contradiction between the profit rate and real wages. The economy is not at full employment and hence a direct opposition between consumption and savings is not what constrains investment. What drives the trade-off between distribution and growth is the incompatibility between the RER required to overcome the external constraint and the RER required to attain equilibrium in the labour market. A crucial gap from a development policy point of view is the one that separates the coordinates $(q_3, y_3)$ (which combine external equilibrium and full employment in Figure 3.5) from $(q_1,\ y_1)$ (which combine external equilibrium *and* labour market equilibrium). The distance between $q_1$ and $q_3$ measures the magnitude of the fall in the relative wage required to attain full employment with external equilibrium in the periphery. This is also a measure of the intensity of the distributive conflict that besets the periphery—what Gerchunoff & Rapetti (2016) have called a 'structural distributive conflict'.

### 3.7.2 Comparative Dynamics in the Long Run: Industrial Policy and the NSL

A different outcome emerges when the government implements a long-run policy aimed at strengthening the NSL (a rise in $\mu$). To the extent that these policies reduce the technology gap, they also boost diversification and productivity growth in the long run. There will be an increase in 'non-price competitiveness', such that for all values of the RER, the economy will attain a higher rate of growth with external equilibrium when $\mu$ is higher. In Figure 3.6, the $\dot{y} = 0$ curve shifts to the left (from $\dot{y}_1 = 0$ to $\dot{y}_2 = 0$) following the rise in $\mu$. The new equilibrium that emerges from the change in policy (i.e. point *B*) entails both higher growth and a better income distribution than the old equilibrium (i.e. point *A*). For simplicity, it is assumed in Figure 3.6 that the impact of technological learning and structural change is strong enough to bring the periphery to full employment with equilibrium in the labour market and in the external sector.

This result reflects the LAS perception of the central role that structural change and technological catching-up play in economic development. It also carries important implications for thinking on the political economy of development, which was central to ECLAC's work (Sunkel & Paz 1970) and the focus of Prebisch's last book (Prebisch 1981).

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 66
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



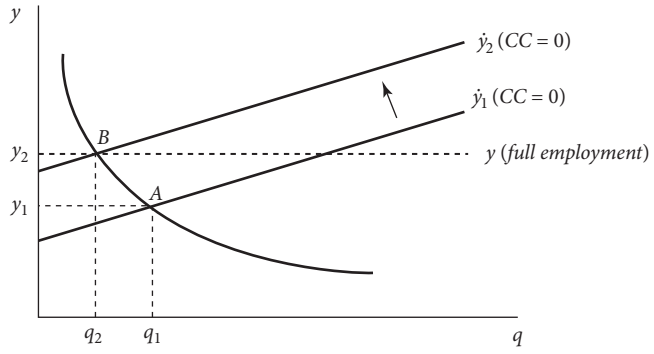


**Figure 3.6.** Growth, income distribution, and industrial and technological policy
*Source*: Author's elaboration

Without technical change and diversification, the economy will be stuck in the bad equilibrium at point *A*. Any attempt to boost growth will be curbed by the external constraint. Such an equilibrium entails slower growth, more unemployment, and lower wages as compared to point *B*, making political conflict and instability (and the threat to political democracy) more intense. A change towards full employment equilibrium would require channelling investments towards new, more technology-intensive activities, and away from traditional sectors, with a crucial role for ITP and public investment.

## 3.8 Conclusion

This chapter summarized some of the key LAS ideas, differentiating—in a highly stylized form—the original LAS from the contributions of the neo-structuralism. It is also argued that many of these ideas are nowadays part of a broader intellectual tradition, represented by economic models of growth and distribution combining Keynesian and evolutionary traits.

The evolutionary side of LAS stresses the role of the technology gap in shaping competitiveness and diversification in the periphery. To overcome specialization in a narrow set of goods based on static comparative advantages, it is necessary for the periphery to reduce the technology gap with the centre and accelerate technological learning. The analysis of the learning process in laggard economies, technological innovation and diffusion shifted LAS towards the works and approaches of evolutionary economists. In particular, the so-called neo-structuralism gradually introduced (explicitly or implicitly) the evolutionary view of technical change as the micro foundations of structural change and international specialization. The concepts of tacitness, path-dependence, and lock-in of technological capabilities are central to the understanding of why Latin America failed to converge and of the critical role that ITP plays in catching up.

The Keynesian side, in turn, stems from the perception that the BOP constraint and external vulnerability in the periphery are the chief manifestations (at the macroeconomic level) of centre–periphery technological asymmetries. The external constraint on growth curbs the expansion of aggregate demand, reduces the demand for labour and hinders the ability of the periphery to fully absorb, in the modern sector, its large stock of underemployed or informal workers. As a result, 'structural heterogeneity' in the labour market tends to persist and debilitates the bargaining power of labour. This makes it more difficult

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 67
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



for the periphery to transform productivity increases into higher wages. In addition, as the periphery competes mainly in commodity markets with very low technological barriers, it cannot retain gains in productivity in the form of higher profits. These two forces combined explain the trend in the periphery towards the deterioration of its terms of trade (the Prebisch-Singer hypothesis).

To some extent, a competitive and stable RER may help the periphery to diversify exports despite technological backwardness. By fostering price competitiveness, it would allow the periphery to grow at higher rates and benefit from Kaldor-Verdoorn gains in productivity. However, the RER will not be a useful tool in the absence of an industrial policy to foster learning and if differences in productivity between centre and periphery are too high to be compensated by lower relative wages. In addition, a high RER has negative consequences in terms of income distribution (by bringing about a fall in real wages). Therefore, both industrial and technology policy and exchange rate policy should be considered strategic complements in the process of economic development.

Most Latin American countries have kept their capital accounts open since the 1990s, albeit, in a few cases, capital controls have been temporarily applied. In this context, periods of abundant financial liquidity exacerbate the appreciation of the RER and boost external disequilibria, leading to 'sudden stops', debt crises, the collapse of investment, and economic contraction or slow growth. Neo-structuralists have been especially preoccupied with the need to apply prudential macro policies and capital controls to curb the impact of short-term capital inflows, whose negative effects on growth and technological capabilities extend well beyond short-run cycles.

## References

Alcorta, L & Peres, W 1998, Innovation systems and technological specialization in Latin America and the Caribbean, *Research Policy*, 26, 857–81.

Amsden, A 1989, *Asia's Next Giant: South Korea and Late Industrialization*, Oxford University Press, New York.

Araujo, RA & Lima, GT 2007, A structural economic dynamics approach to balance of payments constrained growth, *Cambridge Journal of Economics*, 31(5), 755–74.

Arthur, B 1994, *Increasing Returns and Path-Dependency in Economics*, Michigan University Press, Ann Arbor.

Bárcena, A & Torres, M 2019, Del estructuralismo al neoestructuralismo: la travesía intelectual de Osvaldo Sunkel, CEPAL, Naciones Unidas, Santiago de Chile.

Bell, M 2006, Time and technological learning in industrialising countries: How long does it take? How fast is it moving (if at all)?, *International Journal of Technology Management*, 36(1–3), 25–39.

Bértola, L & Ocampo, JA 2012, *The Economic Development of Latin America since Independence*, Oxford University Press, Oxford.

Bielshowski, R 2009, Sixty years of ECLAC: Structuralism and neo-structuralism, *CEPAL Review*, 97, 171–92.

Blecker, RA 2011, Long-run growth in open economies: Export-led cumulative causation or a balance-of-payments constraint?, in G Harcourt and P Kriesler (eds), *Handbook of Post-Keynesian Economics*, volume 1, Oxford University Press, Oxford, pp. 390–414.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 68
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



Blecker, R 2016, The debate over Thirlwall's law: Balance-of payments-constrained growth reconsidered, *European Journal of Economics and Economic Policy: Interventions*, 13(3), 275–90.

Blecker, R & Razmi, A 2010, Export-led growth, real exchange rates, and the fallacy of composition, in M Setterfield (ed.), *The Handbook of Alternative Theories of Economic Growth*, Edward Elgar, Cheltenham, pp. 379–396.

Blecker, R & Setterfield, M 2019, *Heterodox Macroeconomics: Models of Demand, Distribution and Growth*, Edward Elgar, Cheltenham.

Botta, A 2009, A structuralist North–South model on structural change, economic growth, and catching up, *Structural Change and Economic Dynamics*, 20, 61–73.

Bresser-Pereira, LC 2008, Dutch Disease and its neutralization: a Ricardian approach, *Brazilian Journal of Political Economy*, 28(1), 47–71.

Carlin, W & Soskice, D 2006, *Macroeconomics: Imperfections, Institutions, and Policies*, Oxford University Press, New York.

Chang, H-J 2001, Infant industry promotion in historical perspective: A rope to hang oneself or a ladder to climb with? Prepared for the conference Development Theory at the Threshold of the Twenty-first Century, Economic Commission for Latin America and the Caribbean, Santiago.

Chang, H-J 2002, *Kicking Away the Ladder: Policies and Institutions for Economic Policy in Historical Perspective,* Anthem Books, London.

Cherkasky, M & Abeles, M 2019, Régimen monetario e instituciones laborales: Una interpretación alternativa de la tendencia a la declinación del traspaso del tipo de cambio (pass-through) en los países periféricos, *CEPAL Review*, 128, August 2019.

Cimoli, M & Dosi, G 1995, Technological paradigms, patterns of learning and development: An introductory roadmap, *Journal of Evolutionary Economics*, 5(3), 243–68.

Cimoli, M & Katz, J 2003, Structural reforms, technological gaps and economic development: A Latin American perspective, *Industrial and Corporate Change*, 12(2), 387–411.

Cimoli, M & Porcile, G 2014, Technology, structural change and BOP-constrained growth: A structuralist toolbox, *Cambridge Journal of Economics*, 38(1), 215–37.

Doner, R & Ross Schneider, B 2016, The middle-income trap: More politics than economics, *World Politics*, 68(4), 608–44.

Dosi, G, Grazzi, M & Moschella, D 2015, Technology and costs in international competitiveness: From countries and sectors to firms, *Research Policy*, 44, 1795–814.

Dutt, A 2002. Thirlwall's law and uneven development, *Journal of Post-Keynesian Economics*, 24(3), 367–90.

ECLAC 2012, *Structural Change for Equality: An Integrated Approach to Development*, ECLAC, Santiago de Chile.

ECLAC 2016, *The Inefficiency of Inequality*, ECLAC, Santiago de Chile.

Erten, B 2010, Uneven development and the terms of trade: A theoretical and empirical analysis, PhD Thesis, University of Massachusetts Amherst.

Fajnzylber, F 1983, *La industrialización trunca de América Latina*, Nueva Imagen, Mexico City.

Fajnzylber, F 1990, Industrialization in Latin America: From the 'black box' to the empty box, *Cuadernos de la CEPAL no. 60*, CEPAL, Santiago de Chile.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 69
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



Felipe, J, Kumar, U, Abdon, A & Bacate, M 2012, Product complexity and economic development, *Structural Change and Economic Dynamics*, 23(1), 36–68.

Ffrench-Davis, R 2012, Employment and real macroeconomic stability: The regressive role of financial flows in Latin America, *International Labour Review*, 151(1–2), 21–41.

Ffrench-Davis, R & Ocampo, JA 2001, The globalization of financial volatility, in R Ffrench-Davis (ed.), *Financial Crises in 'Successful' Emerging Economies*, Brookings Institution Press/ECLAC, Washington, DC, pp. 1–36.

Frenkel, R & Rapetti, M 2011, A concise history of exchange rate regimes in Latin America, in JA Ocampo and J Ros (eds), *The Oxford Handbook of Latin American Economics*, Oxford University Press, Oxford, pp. 187–213.

Gerchunoff, P & Rapetti, M 2016, La Economía Argentina y su Conflicto Distributivo Estructural, *El Trimestre Económico*, LXXXIII(2/130), 225–72.

Gouvea, RR & Lima, GT 2010, Structural change, balance of payments constraint and economic growth: Evidence from the multi-sectoral Thirlwall's law, *Journal of Post Keynesian Economics*, 33(1), 169–204.

Guzman, M, Ocampo, JA & Stiglitz, J 2018, Real exchange rate policies for economic development, *World Development*, 110, 51–62.

Katz, J (ed.) 1987, *Technology Generation in Latin American Manufacturing Industries*, Macmillan, London.

Katz, J 1997, Structural reforms, the sources and nature of technical change, and the functioning of the national systems of innovation: The case of Latin America, Paper presented at the STEPI International Symposium on Innovation and Competitiveness in NIEs, Seoul, Republic of Korea, May.

Katz, J & Stumpo, G 2001, Sectoral regimes, productivity and international competitiveness, *CEPAL Review*, 75, 131–52.

Koo, Y 2013, Evolution of industrial policies and economic growth in Korea: Challenges, crises and responses, *European Review of Industrial Economics and Policy*, 7, 1–20.

Krugman, P 1989, Differences in income elasticities and trends in real exchange rates, *European Economic Review*, 33(5), 1031–46.

Lee, K 2013, *Schumpeterian Analysis of Economic Catch-Up*, Cambridge University Press, Cambridge.

Missio, FJ, Jayme Jr, FG, Britto, G & Oreiro, JL 2015, Real exchange rate and economic growth: New empirical evidence, *Metroeconomica*, 66(4), 686–714.

Moreno-Brid, J 2003, Capital flows, interest payments and the balance of payments constrained growth model: A theoretical and empirical analysis, *Metroeconomica*, 54(3), 346–65.

Nassif, A, Feijo, C & Araujo, E 2011, The long-term optimal real exchange rate and the currency overvaluation trend in open emerging economies: The case of Brazil, *UNCTAD Discussion Paper no. 206*, UNCTAD, Geneva.

Nassif, A, Feijo, C & Araujo, E 2016, Structural change, catching up and falling behind in the BRICS: A comparative analysis based on trade patterns and Thirlwall's law, *PSL Quarterly Review*, 69(278), 373–421.

Nelson, RR & Winter, SG 1982, *An Evolutionary Theory of Economic Change*, Belknap Press, Cambridge, MA.

Neto, ASM & Porcile, G 2017, Destabilizing austerity: Fiscal policy in a BOP-dominated macrodynamics, *Structural Change and Economic Dynamics*, 43, 39–50.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 70
OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



Ocampo, JA & Parra, M 2010, The terms of trade for commodities since the mid-19th century, *Revista de Historia Económica, Journal of Iberian and Latin American Economic History*, 28(1), 11–43.

Ocampo, JA, Rada, C & Taylor, L 2009, *Growth and Policy in Developing Countries: A Structuralist Approach*, Oxford University Press, Oxford.

Oreiro, JL 2016, Inconsistency and over-determination in balance-of-payments-constrained growth models: A note, *Review of Keynesian Economics*, 4(2), 193–200.

Palma, G 2010, Flying geese and waddling ducks: The different capabilities of East Asia and Latin America to demand-adapt and supply-upgrade their export productivity capacity, in M Cimoli, G Dosi & JE Stiglitz (eds), *The Political Economy of Capabilities Accumulation: The Past and Future of Policies for Industrial Development,* Oxford University Press, Oxford, pp. 203–238.

Peres, W 2009, The (slow) return of industrial policies in Latin America and the Caribbean, in M Cimoli, G Dosi & JE Stiglitz (eds), *The Political Economy of Capabilities Accumulation: The Past and Future of Policies for Industrial Development,* Oxford University Press, Oxford, pp. 175–202.

Pérez Caldentey, E 2015, Una lectura crítica de la 'lectura crítica' de la Ley de Thirlwall, *Investigación Económica*, 74(292), 47–65.

Pinto, A 1976, Naturaleza e implicaciones de la heterogeneidad estructural de la América Latina, *El Trimestre Económico*, 37(145/1), 83–100.

Porcile, G & Spinola, D 2018, Natural, effective and BOP-constrained rates of growth: Adjustment mechanisms and closure equations, *PSL Quarterly Review*, 75(285), 139–60.

Prebisch, R 1949, *El Desarrollo Económico de América Latina y su Principales Problemas*, United Nations, New York.

Prebisch, R 1955, Commercial policy in the underdeveloped countries, *American Economic Review*, 49, 251–73.

Prebisch, R 1963, *Hacia una Dinámica del Desarrollo Latinoamericano*, Fondo de Cultura Económica, Mexico.

Prebisch, R 1976, A critique of peripheral capitalism, *CEPAL Review*, 1, 9–76.

Prebisch, R 1981, *Capitalismo Periférico: Crisis y Transformación*, Fondo de Cultura Económica, Mexico.

Razmi, A, Rapetti, M & Skott, P 2012, The real exchange rate and economic development, *Structural Change and Economic Dynamics*, 23(2), 151–69.

Razzaque, M, Grynberg, R & Osafa-Kwaako, P 2007, Secular decline in relative commodity prices: A brief review of the literature, in R Grynberg and SNewton (eds), *Commodity Prices and Development*, Oxford University Press, New York, pp. 17–34.

Reinert, E 2006, European integration, innovations, and uneven economic growth: Challenges and problems of EU 2005, *Working Papers in Technology Governance and Economic Dynamics no. 5*, Norway and Tallinn University of Technology, Tallinn.

Robinson, J 1966, *The New Mercantilism: An Inaugural Lecture*, Cambridge University Press, Cambridge.

Rodríguez, O 1977, Sobre la Concepción del Sistema Centro-Periferia. *Revista de la CEPAL,* First Semester.

Rodríguez, O 1980, *La Teoría del Subdesarrollo de la CEPAL*, Siglo XXI, Mexico.

Rodríguez, O 2007, *El Estructuralismo Latinoamericano*, Siglo XXI, Mexico.

Comp. by: Muthuraj Stage : Proof ChapterID: 0005021799 Date:23/11/20 Time:10:56:30 Filepath:D:/
BgPr/OUP_CAP/IN/Process1/0005021799.3d
Dictionary : OUP_UKdictionary 71

OUP UNCORRECTED PROOFS – FIRST PROOF, 23/11/2020, SPi



Rodrik, D 2008, The real exchange rate and economic growth, *Brookings Economic Studies Program*, 39(2), 365–439.

Ros, J 2013, *Rethinking Economic Development, Growth, and Institutions,* Oxford University Press, Oxford.

Schumpeter, JA 1942, *Capitalism, Socialism and Democracy*, Harper and Row, New York.

Setterfield, M 2011, The remarkable durability of Thirlwall's law, *PSL Quarterly Review*, 64, 393–427.

Sunkel, O 1978, La dependencia y la heterogeneidad structural, *Trimestre Económico*, 45(1), 3–20.

Sunkel, O 1980, The interaction between styles of development and the environment in Latin America, *CEPAL Review*, 12, 15–68.

Sunkel, O & Paz, P 1970, *El subdesarrollo latinoamericano y la teoría del desarrollo*, Siglo XXI, Mexico City.

Thirlwall, AP 1979, The balance of payments constraint as an explanation of the international growth rate differences, *PSL Quarterly Review*, 32(128), 45–53.

Thirlwall, AP 2011, Balance of payments constrained growth models: History and overview, *School of Economics Discussion Paper no 1111*, University of Kent, Canterbury.

Verspagen, B 1993, *Uneven Growth between Interdependent Economies: An Evolutionary View of Technology Gaps, Trade, and Growth*, Ashgate, Avebury.

Wade, R 1992, East Asia's economic success: Conflicting perspectives, partial insight's, shaky evidence, *World Politics*, 44(2), 270–320.

View publication stats